## (19) World Intellectual Property Organization

International Bureau



# 

(43) International Publication Date 9 September 2005 (09.09.2005)

**PCT** 

# (10) International Publication Number WO 2005/083099 A1

(51) International Patent Classification<sup>7</sup>: 7/42, C12M 1/00, B01D 11/04

C12P 5/00,

(21) International Application Number:

PCT/NL2005/000147

(22) International Filing Date: 1 March 2005 (01.03.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

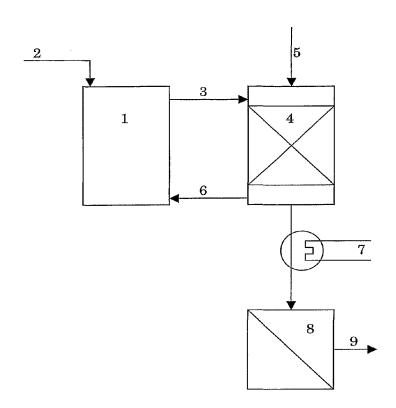
04075638.9 1 March 2004 (01.03.2004) EP

(71) Applicant (for all designated States except US): NED-ERLANDSE ORGANISATIE VOOR TOEGEPAST-NATUURWETENSCHAPPELIJK ONDERZOEK TNO [NL/NL]; Schoemakerstraat 97, NL-2628 VK Delft (NL).

- (72) Inventors; and
- (75) Inventors/Applicants (for US only): DE BONT, Jan [NL/NL]; Lawickse Allee 68, NL-6707 AK Wageningen (NL). BUSSMANN, Paulus, Josephus, Theodorus [NL/NL]; Lupineweg 16, NL-7325 AG Apeldoorn (NL). GOETHEER, Earl, Lawrence, Vincent [NL/NL]; Singel 74, NL-4554 CP Westdorpe (NL). HORNSTRA-XU, Zhuo [NL/NL]; De Staetekamer 17, NL-3823 VN Amersfoort (NL). IRVING, Dionne, Josephine [NL/NL]; Korianderstraat 58, NL-7322 ND Apeldoorn (NL). WALPOT, Jan, Izaak [NL/NL]; Coba Ritsemastraat 25, NL-7312 VD Apeldoorn (NL). VENTE, Johan, Alexander [NL/NL]; Elzenpas 36, NL-6666 HE Heteren (NL).
- (74) Agent: WINCKELS, J.H.F.; Johan de Wittlaan 7, NL-2517 JR Den Haag (NL).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,

[Continued on next page]

#### (54) Title: PROCESS FOR THE PRODUCTION AND RECOVERY OF HYDROCARBONS



(57) Abstract: The invention is directed to a process for the production and recovery chemicals, in particular hydrocarbons, from a fermentation medium, wherein solvent impregnated carriers are used. Accordingly, the invention provides a process for the production of hydrocarbon from a fermentation liquid comprising: - forming said hydrocarbon from said fermentation liquid using a biocatalyst; - contacting said fermentation liquid with a solvent impregnated porous carrier. which solvent impregnated porous carrier has a density that is different from said fermentation liquid, whereby said formed hydrocarbon is sorbed by said solvent impregnated carrier; regenerating said solvent impregnated carrier, whereby a stream of said hydrocarbon is obtained; and - optionally, recycling said regenerated solvent impregnated carrier.

## WO 2005/083099 A1

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,

FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### **Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.